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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/780,825

02/17/2004

Jeffrey A. Hirsch

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21897

7590

11/07/2005

THE MATTHEWS FIRM
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EXAMINER

GARBER, CHARLES D

ART UNIT

PAPER NUMBER

2856

DATE MAILED: 11/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/780,825

Applicant(s)

HIRSCH ET AL.

Examiner

Charles D. Garber

Art Unit

2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-69 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23, 25-38, 40-46, 48, 50-54 and 57-69 is/are rejected.
- 7) ☒ Claim(s) 24, 39, 47, 49, 55 and 56 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 06/28/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

In accordance with 37 CFR 1.105 Examiner requires the submission, from individuals identified under § 1.56(c), or any assignee, such information as may be reasonably necessary to properly examine or treat the matter. This includes:

A copy of any **non-patent literature**, published application, or patent (U.S. or foreign) that was used in the invention process, such as by designing around or providing a solution to accomplish an invention result related to **heating, cooling, material resistance to sulfur compound reaction**.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 7, 8, 14, 27-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 recites the limitation "the supply of purge gas" in the second line of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 8 depending from indefinite claim 7 is indefinite for the same reason.

Claim 27 recites the limitation "said at least one conduit" in the fifth line of the claim and "the purge gas" in the 15th line of the claim. There is insufficient antecedent basis for these limitations in the claim.

Claims 28-31 depending from indefinite claim 27 is indefinite for the same reason.

Claim 14, Examiner cannot determine if Applicant intends range from 10-50 or 10 and above nanograms per minute.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-3, 5, 6, 9-18, 21, 22, 26, 37, 40-44, 46, 48, 50, 51, 53, 54, 59-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcote et al. (US Patent 3,976,450) in view of Vestal (US Patent 4,958,529).

Regarding claims 1 and 37, Marcote discloses a gas sample preparation system and method including calibration sources introduced at items 116 or 118 through flow meter 74 and "clean" carrier gas supply shown in figure 1 (abstract). The device includes a temperature controlled oven which will ensure given temperature ranges.

Item 132 appears to be a main conduit. Item 10 appears to be a communication between the calibration and carrier gasses. Item 86 appears to be a housing with

insulation 90. A portion of conduits 132, 116 and 118 are shown in figure 1 to be inside the housing shown at item 86.

Impurities in the carrier gas will diffuse into the carrier gas at the communication defined by item 10.

Marcote also discloses temperature control using control unit 54 to maintain the desired (selected) temperature by heating (column 7 lines 43-52).

However, Marcote does not disclose a means for selectively lowering the temperature of the housing interior.

Vestal discloses a temperature controlled diffusion cell supplying sample to an analyzer. Vestal teaches "The temperature within the device 20, in turn, can be controlled by... heater 56 and temperature controller 58 provided for direct heating of the sweep gas in chamber 30... On the other hand, for SFC or LC at low liquid flow rates, the chamber 30 may be lowered to subambient temperatures by refrigerator 60, so that the interface can achieve improved transfer of volatile samples. This latter technique substantially enhances the flexibility of the interface."

It would have been obvious to one having ordinary skill in the art at the time the invention was made to cool as well as heat the diffusion cell in order to substantially enhance the flexibility of the interface.

Though the references do not expressly disclose the controlled temperature between about 60°F and about 130°F it would have been obvious to one having ordinary skill in the art at the time the invention was made to control the temperature between about 60°F and about 130°F, since it has been held that where the general

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conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. The Vestal device is considered to operate around room temperature which satisfies the general conditions of the claim.

Regarding claim 2, Though the references do not expressly disclose the controlled temperature between about 60°F and about 100°F it would have been obvious to one having ordinary skill in the art at the time the invention was made to control the temperature between about 60°F and about 100°F, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. The Vestal device is considered to operate around room temperature which satisfies the general conditions of the claim.

Regarding claim 3, though the references do not expressly disclose the controlled temperature between about 75°F and about 77°F it would have been obvious to one having ordinary skill in the art at the time the invention was made to control the temperature between about 75°F and about 77°F, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. The Vestal device is considered to operate around room temperature which satisfies the general conditions of the claim.

As for claim 5, item 120 supplies gas for purging which passes by the communication.

As for claim 6, Examiner takes Official Notice that it is well known to use at least Nitrogen, helium and argon as a carrier gas as in the instant invention alternatives. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use these gases which are generally inert and nonreactive and favored by Marcote (column 8 lines 56-58).

As for claim 9, see item 146, "analyzers"

As for claim 10, Examiner takes Official Notice that it is widely known to use means to connect a calibration gas source to an analyzer. It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ such means in order to ensure proper delivery.

As for claim 11, Examiner considers the analyzer that Girard intends to calibrate can inherently be calibrated at known concentration, temperature and flow rates.

As for claim 12, the references as applied above disclose the claimed invention except for housing comprised of aluminum.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use aluminum, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

As for claim 13, see item 108.

As for claim 14, the reference applied above disclose the claimed invention except for generating an impurity concentration of about 10-50 nanograms/minutes. It would have been obvious to one having ordinary skill in the art at the time the invention

was made to generate an impurity concentration of about 10-50 nanograms/minutes, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

As for claim 16, see item 44.

As for claim 17, see item 146.

As for claim 18, It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations *Ex parte Masham* 2 USPQ2d 1647 1987).

As for claim 21, items 116 and 118 are a plurality of devices for NO₂ or SO₂.

As for claim 22, regulators 136, 140 ensure "clean carrier gas, consisting of ambient air or an inert gas, flows at a constant rate" but not expressly between zero and 2 liters/minute. It would have been obvious to one having ordinary skill in the art at the time the invention was made to pass gas between zero and 2 liters/minute, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

As for claim 26, Examiner takes Official Notice that use of solenoid valves is widely known and It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a solenoid valve so the device may operate under automatic or electronic control.

As for claim 40, Marcote discloses calibrating an analyzer with calibration gas but not expressly based on known values. However, calibration is defined as the process of standardizing (as a measuring instrument) by determining the deviation from a standard so as to ascertain the proper correction factors. The deviations and standards in calibration are impliedly known values.

As for claim 41, see discussion above with respect to claim 14.

As for claim 42, Marcote discloses monitoring concentrations of impurities (column 3 lines 39-41).

As for claim 43, monitoring concentrations after calibration is implied in Marcote.

As for claim 44, Examiner takes Official Notice that it is widely known to compare sample analysis results with known results to determining type as well as concentration of impurities. It would have been obvious to one having ordinary skill in the art at the time the invention was made to compare sample analysis results with known results to determine type as well as concentration of impurities.

As for claim 46, Marcote discloses analyzing sulfur dioxide.

As for claim 48, see item 44.

As for claims 15 and 50, Marcote discloses sulfur dioxide as in the instant invention alternative.

As for claim 51, see discussion above with respect to claim 22.

As for claim 53, though Marcote does not expressly teach the flowmeters are rotometers Examiner takes Official Notice that rotometers are widely known means of measuring flow and It would have been obvious to one having ordinary skill in the art at

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the time the invention was made to use rotometers, which are conventional flow meters used in gas flow measurement.

As for claim 54, see discussion with respect to claims 9, 10 and 40, 42-44 above.

As for claim 59, see discussion above with respect to claim 27.

As for claim 60, see discussion with respect to claim 6 above.

As for claim 61, see discussion with respect to claim 14 above. Marcote discloses producing impurities in the ppm range.

As for claim 62-65, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations *Ex parte Masham 2* USPQ2d 1647 1987).

As for claims 66-68, Marcote disclose an analyzer that analyzes sulfur compounds. Examiner takes Official Notice that Gas Chromatographs (GC) are widely known for analyzing sulfur compounds such as sulfur dioxide that are a common pollutant in stack gas emission and It would have been obvious to one having ordinary skill in the art at the time the invention was made to calibrate a GC instrument to improve accuracy.

As for claim 69, see discussion above with respect to claim 53.

Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marcote et al. (US Patent 3,976,450) as modified by Vestal (US Patent 4,958,529) and applied to claim 37 and further in view of Kerho et al. (US Patent 3,924,442).

The references as applied above lack venting pressure that is undesired.

Kerho teaches "a relief valve 29 is disposed on conduit 64 immediately adjacent the condenser and is used to prevent any anomalous pressure surges from reaching the gas analyzers, and also maintains continuous sample flow through pump 26 and condenser 28 during calibration to minimize time lags and transients." The relief valve is shown venting to atmosphere.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to vent undesired pressure to atmosphere to prevent any anomalous pressure surges from reaching the gas analyzers.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marcote et al. (US Patent 3,976,450) in view of Vestal (US Patent 4,958,529) and applied to claim 1 and further in view of Mettes et al. (US Patent 5,239,856).

Regarding claim 23, the references as applied above lack a back pressure regulator and indicator.

Mettes teaches back pressure regulator 18 and flowmeter 19 after the mixing chamber in a main conduit.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a back pressure regulator and flowmeter in the main conduit in order to ensure precise flow to an instrument under test.

Though Mettes teaches flowmeter rather than a pressure indicator, Examiner takes Official Notice that both devices are widely known alternative devices for monitoring flow for the purpose of regulating flow and one having ordinary skill would have known to use either a pressure or flow meter to monitor proper flow delivery.

Claims 4, 38, 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcote et al. (US Patent 3,976,450) in view of Vestal (US Patent 4,958,529) and applied to claim 1 and further in view of Sauvageau et al. (US Patent 5,457,983).

The references as applied above do not expressly teach a semiconductor heating and cooling device.

Sauvageau teaches "cooling means preferably comprises an array of thermoelectric cells 52, which are solid state heat pumps that utilize the Peltier effect. Another advantage of using Peltier cells 52 is that they may be used as heaters during cleaning process. Heating the condenser 40 helps removing residues of the volatile liquid substance."

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a semiconductor heating and cooling device such as a Peltier device that has the advantage of providing both heating and cooling in a single compact structure.

Claims 19 20, 45, 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcote et al. (US Patent 3,976,450) in view of Vestal (US Patent 4,958,529) and applied to claims 1 and 16 above and further in view of Entech Instruments, Inc. (<http://www.entechinst.com/about.php>)

The references as applied above do not expressly teach sulfur inert tubing.

Entech Instruments, Inc. teaches Silonite® coated GC injection liners and fittings have been available for sale in this country since 2002. Applications include "sulfur compound analysis" and "polar and reactive compounds show better GC injection

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profiles, with reduced tailing” because Silonite® renders stainless steel inert as fused silica greatly extending the range of compounds that can be collected and analyzed.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Silonite® lined conduits in the device renders stainless steel inert as fused silica greatly extending the range of compounds that can be collected and analyzed.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marcote et al. (US Patent 3,976,450) in view of Vestal (US Patent 4,958,529) and applied to claims 1 and 16 above and further in view of Shindo et al. (US Patent 4,977,776).

Shindo discloses a gas mixing device for an analyzer. Shindo teaches “When an abnormal pressure is established at the downstream side, the pressure switch 5 operates to activate an alarm.”

It would have been obvious to one having ordinary skill in the art at the time the invention was made to activate an alarm for an abnormal pressure equipment in order to notify an operator to take corrective action.

Claims 27-29, 32-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcote et al. (US Patent 3,976,450) in view of Vestal (US Patent 4,958,529), Sauvageau et al. (US Patent 5,457,983) and Entech Instruments, Inc. (<http://www.entechinst.com/about.php>)

Regarding claim 27, the references teach all the limitations as discussed above with respect to claims 4 and 20.

Limitations regarding flowing purge gas during standby mode and introducing pure gas during calibration and conveying calibration gas to an instrument are considered intended use of the device. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations *Ex parte Masham* 2 USPQ2d 1647 1987).

As for claim 28, see discussion with respect to claim 8 above.

As for claim 29, see discussion with respect to claim 20 above.

As for claim 32, Marcote discloses control unit 54 for maintaining temperature and Sauvageau teaches "means controlling the [peltier] cells 52 and maintaining the mixed gas at the outlet 46 at [the] given temperature" but neither reference teaches also providing for manual temperature control. Examiner, takes Official Notice that manual control is widely known and It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide manual control of temperature in order to allow an operator to make ad hoc changes to instrument conditions as needed.

As for claim 33, see discussion above with respect to claim 12.

As for claim 34, see discussion above with respect to claim 14.

As for claim 35, the references as discussed above disclose the claimed invention except for a portable case. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the device in a portable case, since it has been held that making an old device portable or movable without

producing any new and unexpected result involves only routine skill in the art, *In re Lindberg*, 93 USPQ 23 (CCPA 1952).

As for claim 36, Examiner takes Official Notice that it is widely known to operate devices off 12 volt direct current and It would have been obvious to one having ordinary skill in the art at the time the invention was made to operate a device off a 12 volt direct current source so that it may be operated remotely with an automobile power source.

Claims 30, 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcote et al. (US Patent 3,976,450) as modified by Vestal (US Patent 4,958,529), Sauvageau et al. (US Patent 5,457,983) and Entech Instruments, Inc. (<http://www.entechinst.com/about.php>) and applied to claim 27 above and further in view of Mettes et al. (US Patent 5,239,856).

The reference as applied above lack a manifold.

Mettes teaches manifold 16 and sources 12 and 13 which may be considered headers as in the instant invention.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a manifold "for gathering the high concentration standard gases from the sources [headers] of high concentration standard gases and delivering a high concentration standard gas mixture".

Allowable Subject Matter

Claims 7, 8, 24, 39, 47, 49, 55, 56 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Berger (US Patent 5,665,314) teaches a temperature-controlled thermal chamber, includes a heating unit, a temperature sensor, and a cooling unit. A controlled temperature in the oven resulting from the operation of the heating unit and/or cooling unit may be effected in response to a control signal generated by a computer. A sample mixture passing through a column is thereby exposed to a desired temperature profile according to a selected program so that the sample will separate into its components for subsequent detection by a detector (abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide operation of a heating unit and/or cooling unit be effected in response to a control signal generated by a computer to control the temperature in order to obtain a desired temperature profile according to a selected program so that the sample will separate into its components for subsequent detection by a detector.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles D. Garber whose telephone number is (571) 272-2194. The examiner can normally be reached on 6:30 a.m. to 3:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cdg



**CHARLES GARBER
PRIMARY EXAMINER**